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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,585	10/12/2001	Danilov Vyacheslav Alexandrovich	PAGA05US	1313

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EXAMINER	
YAM, STEPHEN K	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/975,585	ALEXANDROVICH ET AL.	
	Examiner	Art Unit	
	Stephen Yam	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-16 and 20-22* is/are rejected.

7)☒ Claim(s) *17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 0704
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 20, 2004 has been entered. Claims 12-22 are still pending.

Claim Objections

2. Claims 12, 16, 17, and 20 are objected to because of the following informalities:

Claims 12, 16, and 20 contain numerous antecedent basis problems, such as "the common bus", "the other side", "the second photodiode electrode", etc. Applicant is required to provide sufficient antecedent basis for all terminology within the claim language.

In Claims 12 and 20, it is unclear what "the control electrode" is a functional component of, as the claim language does not recite the control electrode associated with any component (photodiode, transistor, etc.) of the detector.

In Claim 17, line 2, "the *series-connected* radiation-sensitive element" lacks proper antecedent basis, as no mention of a series connection is present in the prior claim limitations.

In Claim 17, line 3, "the common point" lacks proper antecedent basis.

In Claim 17, line 3, "the load signal output" lacks proper antecedent basis, as prior references utilize the term "load signal contact".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 12, 13, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Imaide et al. US Patent No. 4,355,335.

Regarding Claim 12, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a photodiode (3) and transistor (6) connected in series (see Fig. 1A), a load (12), and an interrogation pulse generator (2), wherein the load is connected to the photodiode through a signal electrode (bottom contact of photodiode (3)) (electrically connected through a common ground plane), and from another side, said load is connected to a common bus (17), a second photodiode electrode (top contact of (3)) is connected to a first electrode (left contact of (6)) of the transistor, a control electrode (top contact of (6)) of the transistor is connected to an output ($O_{y1} - O_{yN}$) of the interrogation pulse generator, and a third transistor electrode (right contact of (6)) is coupled with the common bus (see Fig. 1A), wherein the radiation detector is adapted such that a charge corresponding to a radiant flux incident to the photodiode (see Col. 1, lines 12-15 and 59-65) flows through the load (see Col. 2, lines 8-10), when an interrogation pulse (see Col. 2, lines 27-33) of the interrogation pulse generator is supplied to the control electrode of the transistor (see Col. 2, lines 27-33 and Fig. 1A).

Regarding Claim 13, Imaide et al. teach (see Fig. 1A) N groups of elements (forming one column of photodiodes in Fig. 1A), each consisting of the series-connected photodiode and transistor, are placed in parallel with the load (see Fig. 1A), and the interrogation pulse generator comprises N outputs ($O_{y1} - O_{yN}$), each of the outputs being coupled with the transistor control electrode from the respective group of elements (see Fig. 1A), where N is an integer > 1.

Regarding Claim 20, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a radiation-sensitive element (3) and a load, with said sensitive element being connected to a supply voltage bus (ground) at one side, and the load being connected to a common bus (17) at one side, wherein said detector additionally comprises a transistor (6) and an interrogation pulse generator (2), with the sensitive element connected to a first electrode (left contact of (6)) of the transistor at another side, and an output ($O_{y1} - O_{yN}$) of the interrogation pulse generator is coupled with a control electrode (top contact of (6)) of the transistor, a third transistor electrode (right contact of (6)) is coupled with a load signal contact (see Fig. 1A), wherein the radiation detector is adapted such that a charge corresponding to a radiant flux incident to the photodiode (see Col. 1, lines 12-15 and 59-65) flows through the load (see Col. 2, lines 8-10), when an interrogation pulse (see Col. 2, lines 27-33) of the interrogation pulse generator is supplied to the control electrode of the transistor (see Col. 2, lines 27-33 and Fig. 1A).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Henry et al. US Patent No. 3,535,526.

Regarding Claim 14, Imaide et al. teach the detector in Claim 13, according to the appropriate paragraph above. Imaide et al. also teach the radiation detector having a total number (# of rows) of groups of elements equal to a number of N outputs of the interrogation pulse generator (see Fig. 1A). Imaide et al. do not teach the detector having L loads, with N_i group of elements placed in parallel with each i-th load, where L is an integer > 1, N_i is a positive integer, and i is an index of the positive integer. Henry et al. teach (see Fig. 2) a radiation detector comprising a phototransistor array with N (# of columns) groups (a column of elements) of elements such that the detector has L (= # of rows) loads (20_j) (see Col. 1, lines 46-52), with N_i (= # of columns) groups of elements being placed in parallel with each i-th load, and the total number of groups of elements contained in said detector equals the number of N outputs of the interrogation pulse generator (generating X_1 to X_n- see Col. 2, lines 29-31), where L is an integer is greater than one, N_i is a positive integer (see Fig. 2), and i is an index of the positive integer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple loads with specified groups of elements being placed in parallel with each load, as taught by Henry et al. in the detector of Imaide et al., to provide multiple simultaneous readouts for each row or column in order to more quickly output a full two-dimensional detection image.

7. Claims 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Henry et al., further in view of Herbst et al. US Patent No. 4,338,515.

Regarding Claim 15, Imaide et al. in view of Henry et al. teach the detector in Claim 14, according to the appropriate paragraph above. Imaide et al. do not teach capacitors connected in parallel with the photodiodes. Herbst et al. teach (see Fig. 1) a detector with an array (see Fig. 6) of elements (SE), the elements comprising a radiation-sensitive element (FD), transistor (T1), load element (L), and interrogation pulse generator (supplying $\phi 2$), also including a capacitor (C_{SE}) connected in parallel with each radiation-sensitive element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the capacitor setup of Herbst et al. in the detector of Imaide et al. in view of Henry et al., to stabilize the frequency characteristics of the optical signal so it is more accurately outputted to a readout.

8. Claims 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Herbst et al.

Regarding Claim 16, Imaide et al. teach (see Fig. 1A) a radiation detector comprising a radiation-sensitive element (3) and a load, with said sensitive element being connected to a supply voltage bus (ground) at one side, and the load being connected to a common bus (17) at one side, wherein said detector additionally comprises a transistor (6) and an interrogation pulse generator (2), with the sensitive element connected to a first electrode (left contact of (6)) of the transistor at another side, and an output ($O_{y1} - O_{yN}$) of the interrogation pulse generator is coupled with a control electrode (top contact of (6)) of the transistor, a third transistor electrode (right contact of (6)) is coupled with the common bus (see Fig. 1A), wherein the radiation

detector is adapted such that a charge corresponding to a radiant flux incident to the photodiode (see Col. 1, lines 12-15 and 59-65) flows through the load (see Col. 2, lines 8-10), when an interrogation pulse (see Col. 2, lines 27-33) of the interrogation pulse generator is supplied to the control electrode of the transistor (see Col. 2, lines 27-33 and Fig. 1A). Regarding Claim 21, Imaide et al. teach the detector in Claim 20, according to the appropriate paragraph above. Regarding Claim 16, Imaide et al. do not teach a capacitor with the sensitive element being connected to a first plate of the capacitor, with a second plate of the capacitor connected to a signal contact of the load or the common point coupled to the load signal output via the capacitor. Regarding Claim 21, Imaide et al. do not teach a capacitor connected between the first transistor electrode and the common bus. Herbst et al. teach (see Fig. 1) a detector with an array (see Fig. 6) of elements (SE), the elements comprising a radiation-sensitive element (FD), transistor (T1), load element (L), and interrogation pulse generator (supplying $\phi 2$), also including a capacitor (C_{SE}) connected in parallel with each radiation-sensitive element, wherein the sensitive element is connected to a supply voltage bus (ground) and to the first electrode (left contact of (T1)) of the transistor and to a first plate (bottom) of the capacitor, with a second plate (top) of the capacitor connected to a signal contact (circuit point (1)) of the load (see Fig. 1). Regarding Claim 21, Herbst et al. teach the capacitor (C_{SE}) connected between the first transistor electrode and the common bus. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the capacitor setup of Herbst et al. in the detector of Imaide et al., to stabilize the frequency characteristics of the optical signal so it is more accurately outputted to a readout.

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Imaide et al. in view of Herbst et al., further in view of Dudley et al. US Patent No. 5,144,133.

Regarding Claim 22, Imaide et al. in view of Herbst et al. teach the detector in Claim 21, according to the appropriate paragraph above. Regarding Claim 11, Imaide et al. (in view of Herbst et al. when dependent on Claim 10) teach the detector in Claims 5-7, according to the appropriate paragraph above. Herbst et al. also teach (see Fig. 1) a common point (E) of each transistor and capacitor for each radiation sensitive element in each group of elements as after the radiation sensitive element and before the transistor (see Fig. 1). Imaide et al. do not teach a resistor connected between each radiation sensitive element and a common point of each transistor and capacitor in each group of elements, respectively. Dudley et al. teach (see Fig. 1 and 2) a similar detector, with groups (see Fig. 1) of radiation-sensitive elements (11) and a resistor (19) connected after the radiation sensitive element and before a transistor (connected to MUX). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a resistor connected between the first electrode of the transistor and the radiation-sensitive element, by combining the teachings of Dudley et al. with the detector of Imaide et al. in view of Herbst et al., to provide elements for a low-pass filter to reduce high-frequency noise, as taught by Dudley et al. (see Col. 2, lines 49-56).

Allowable Subject Matter

10. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

and any intervening claims and overcoming all the claim objections set forth in this Office Action.

11. The following is a statement of reasons for the indication of allowable subject matter:

The invention as claimed, specifically in combination with a radiation detector having a capacitor connected to a common point of a group consisting of a radiation-sensitive element and a transistor, with the common point coupled to a load signal output via the capacitor, wherein a first plate of the capacitor is connected to the sensitive element and a first electrode of the transistor and the second plate is connected with the signal contact of the load, with both the load and the transistor connected to a common bus, is not disclosed or made obvious by the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU
PATENT EXAMINER